METHOD AND SYSTEM FOR DEPLOYING A DISPLAY AND KEYBOARD IN A RACK

BACKGROUND OF INVENTION

In recent years, industrial personal computers have become increasingly prevalent in many industries. It is not uncommon today to see rows of industrial PCs arranged in racks. Often these PC have associated with them displays so that a technician can walk among the rows of racks of PCs and can monitor and/or manipulate the status of such PCs. Recently, designers of industrial computers have created very thin computers which fit into a 1 U-sized opening.

In the past, PC engineers have devised computer display and keyboard units which fit into a 1 U slot or bay. Typically, these 1 U display and keyboard units have been designed in either of two ways. The first design is essentially a laptop computer mounted on a rail that slides in and out of a 1 U slot in a rack. The second design is similar, and it may be viewed as a laptop computer with a hinge between the keyboard and the display which permits the display to lie flat on the rail that supports the keyboard, which is the leading edge component when the unit is deployed using the rails.

While these 1 U keyboard and display units have been used extensively in the past, they do have some drawbacks.

First of all, the laptop on a rail or the keyboard and display clam shell model has two significant drawbacks. The display and the keyboard must be designed and manufactured as very thin components, so that when they are folded shut with the display on top of the keyboard, that the closed unit still fits within a 1 U slot in the rack. These design constraints add expense to the finished unit. Also, this display over keyboard clam shell design requires the keyboard to fully extend into the aisle between the racks even when the technician only wants to monitor the computers using the display and does not wish to use the keyboard.

Secondly, the "fully reclined" display design where the hinge or other connection between the display and the keyboard permits the display to fully recline and to lie flat against the rail suffers from the same aisle encroachment problem as the clam shell approach.

Consequently, there exists a need for improved methods and systems for deploying personal computers or keyboard and display combination units in an efficient manner in a rack of industrial personal computers.

SUMMARY OF INVENTION

It is an object of the present invention to provide a system and method for deploying a display and keyboard combination for a rack-mounted industrial personal computer in an efficient manner.

It is a feature of the present invention to utilize a design having the display component leading during the deployment process.

It is another feature of the present invention to include an independently retractable keyboard.

It is an advantage of the present invention to achieve improved efficiency in stowing and deploying display and keyboard units for rack-mounted 1 U industrial personal computers.

The present invention is an apparatus and method for stowing and deploying 1 U display and keyboard units for rack-mounted industrial personal computers designed to satisfy the aforementioned needs, provide the previously stated objects, include the above-listed features, and achieve the already articulated advantages. The present invention is carried out in a "wasted encroachment-less" manner in a sense that the space consumed by a keyboard during times when it is not in use has been greatly reduced.

Accordingly, the present invention is a system and method including a 1 U sized display and keyboard combination which provides for independent deployment of the keyboard after the display has been deployed.

BRIEF DESCRIPTION OF DRAWINGS

The invention may be more fully understood by reading the following description of the preferred embodiments of the invention, in conjunction with the appended drawings wherein:

FIG. **1** is a perspective view of a prior art rack-mounted industrial computer system.

FIG. **2** is a perspective view of a system of the present invention, in which the display/keyboard combination is stowed.

FIG. **3** is a perspective view of a partially deployed system of the present invention, where the display is fully deployed and the keyboard remains concealed.

FIG. **4** is a perspective view of a fully deployed system of the present invention.

DETAILED DESCRIPTION

Now referring to the drawings wherein like numerals refer to like matter throughout, and more specifically referring to FIG. **1**, there is shown a system of the prior art, generally designated **100**, including a first rack of industrial personal computers **102** and a second rack of industrial personal computers **104** with an aisle **106** disposed therebetween. First rack of industrial personal computers **102** is representative of second rack of industrial personal computers **104** and is shown in detail to include a plurality of columns of industrial computing components **110**. A large industrial computing component **112** is shown disposed in first rack of industrial personal computers **102**. A 1 U-sized industrial computing component **114** is shown disposed at an intermediate height of first rack of industrial personal computers **102**. A technician may walk in the aisle **106** between first rack of industrial personal computers **102** and second rack of industrial personal computers **104** for various reasons, including installation or repair of components, monitoring or data entry into computers in first rack of industrial personal computers **102**, etc.

Now referring to FIG. **2**, there is shown a 1 U-sized display/keyboard unit **116**, of the present invention which may be inserted into a slot or bay in first rack of industrial personal computers **102**, which is similar to that holding 1 U-sized industrial computing component **114**. 1 U-sized display/keyboard unit **116** is shown having a display **120**, with a display leading edge **122** and a display trailing edge **124** disposed in front of a keyboard housing **130** disposed in a display/keyboard rail system **140**. 1 U-sized display/keyboard unit **116** is a data I/O unit for both receiving information via the keyboard and for displaying information. Display **120** can be any type of display, such as an LCD or other known flat panel display. Keyboard housing **130** has a keyboard housing leading edge **132** and a keyboard housing trailing edge **134**. Display/keyboard rail system **140** has a display/keyboard rail system front end **142** and a display/keyboard rail system rear end **144**. Display/keyboard rail system front end **142** could be disposed in first rack of industrial personal computers **102**, so that it is